

HAWAII, ISLAND OF MAUI

16599500 OPANA TUNNEL AT KAILIILI

LOCATION.--Lat 20° 51'04", long 156° 16'17", Old Hawaiian Datum, Hydrologic Unit 20020000, on left bank at tunnel outlet, 0.3 mi north of Kailili, and 2.7 mi east of Makawao.

PERIOD OF RECORD.--May 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,340 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Phillip Teeters. Records fair. Tunnel diverts water from Opana Gulch for agricultural and domestic use in the Kokomo, Makawao, and Pukalani areas.

AVERAGE DISCHARGE.--38 years (water years 1966-2003), 3.13 ft³/s (2,270 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18 ft³/s, March 31, 1982, April 12, 1986, March 23, 1994; minimum daily, 0.11 ft³/s, November 5-10, 1973, October 5, 6, 25, 26, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 11 ft³/s, Feb. 15; minimum daily, 0.17 ft³/s, Nov. 24-28.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.38	0.60	0.39	0.75	1.7	2.5	1.0	0.88	0.24	e0.53	1.7	8.4
2	0.39	0.44	0.27	0.64	1.0	2.1	0.89	0.84	0.24	e0.50	1.4	5.6
3	0.38	0.40	0.56	0.56	0.80	1.9	0.74	0.79	0.24	e0.55	1.4	3.0
4	0.38	0.37	0.58	0.47	0.61	1.8	0.68	0.77	0.43	e0.37	1.2	2.5
5	0.78	0.33	0.36	0.42	0.50	1.6	0.62	0.72	0.62	e0.31	0.96	2.4
6	0.62	0.30	0.27	0.39	0.42	1.4	0.63	0.68	0.36	e0.28	0.88	2.2
7	0.40	0.28	6.0	0.35	0.44	1.3	0.82	0.63	0.27	e3.9	0.81	3.9
8	0.37	0.27	2.3	0.34	0.37	1.4	0.66	0.61	0.24	e6.5	1.3	2.7
9	0.38	0.27	1.0	0.31	0.31	1.3	0.59	0.68	0.23	e4.9	4.7	2.1
10	0.30	0.24	4.1	0.29	0.28	1.2	1.3	1.1	0.21	e2.2	4.1	2.0
11	0.29	0.24	6.2	4.1	0.25	1.1	2.9	0.83	0.20	e1.9	2.3	1.8
12	0.40	0.24	2.5	2.2	0.24	1.1	1.1	0.67	2.0	e4.9	3.0	1.7
13	0.31	0.24	1.5	1.1	0.24	1.0	0.78	0.59	1.3	e7.8	2.9	1.6
14	0.27	0.26	1.0	0.75	9.5	0.94	0.62	0.54	0.50	e2.3	7.3	1.5
15	2.7	0.25	0.82	1.7	11	0.90	0.54	0.51	0.34	e1.5	6.0	1.4
16	8.5	0.24	0.67	2.6	7.9	0.88	0.70	0.48	0.33	e1.3	6.8	1.3
17	3.8	0.23	0.56	1.0	4.6	0.87	0.87	0.48	0.40	e1.1	4.3	1.2
18	1.6	0.23	0.47	0.73	3.1	0.82	0.84	0.46	e0.69	e1.1	5.6	1.2
19	1.0	0.21	0.42	0.57	2.5	0.76	0.90	0.43	e1.7	7.7	7.6	1.1
20	0.79	0.22	0.38	1.1	2.5	0.78	5.4	0.41	e0.59	4.5	4.9	1.1
21	0.69	0.20	0.34	1.7	7.1	0.74	6.6	0.39	e0.65	2.6	4.5	1.1
22	0.60	0.20	0.39	0.85	4.9	0.79	7.3	0.42	e0.43	2.1	3.3	1.0
23	0.62	0.20	4.9	0.62	3.1	0.71	5.7	0.39	e0.50	1.8	3.0	1.00
24	0.82	0.17	1.6	0.48	4.2	0.65	4.4	0.40	e1.0	1.5	2.9	0.93
25	0.97	0.17	0.85	0.79	2.6	0.60	2.6	0.38	e1.6	1.3	2.5	0.88
26	0.70	0.17	0.72	0.90	2.3	0.60	1.9	0.35	e0.53	1.3	2.3	0.85
27	0.55	0.17	6.2	0.61	2.2	0.61	1.5	0.31	e0.37	1.1	2.2	0.82
28	0.46	0.17	3.3	0.46	3.2	1.6	1.2	0.30	e0.37	1.1	2.1	0.79
29	0.48	1.6	1.9	0.41	---	5.0	1.1	0.28	e0.31	0.97	2.0	0.77
30	0.43	0.76	1.2	0.40	---	2.1	0.95	0.27	e0.53	0.92	2.1	0.73
31	0.44	---	0.93	4.1	---	1.2	---	0.26	---	0.89	2.0	---
TOTAL	30.80	9.67	52.68	31.69	77.86	40.25	55.83	16.85	17.42	69.72	98.05	57.57
MEAN	0.99	0.32	1.70	1.02	2.78	1.30	1.86	0.54	0.58	2.25	3.16	1.92
MAX	8.5	1.6	6.2	4.1	11	5.0	7.3	1.1	2.0	7.8	7.6	8.4
MIN	0.27	0.17	0.27	0.29	0.24	0.60	0.54	0.26	0.20	0.28	0.81	0.73
AC-FT	61	19	104	63	154	80	111	33	35	138	194	114

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2003, BY WATER YEAR (WY)

MEAN	1.86	3.27	3.95	3.62	3.68	4.55	4.95	3.36	2.09	2.55	2.16	1.54
(WY)	(1984)	(1968)	(1971)	(1989)	(1969)	(1982)	(1968)	(1987)	(1997)	(1997)	(1969)	(1992)
MAX	5.40	7.97	9.19	7.55	9.04	11.1	9.35	7.42	6.38	8.17	4.98	5.69
(WY)	(1985)	(1992)	(1977)	(1977)	(1978)	(1983)	(1992)	(2003)	(1999)	(1981)	(1974)	(1984)
MIN	0.14	0.25	0.65	0.22	0.36	0.51	0.27	0.54	0.50	0.40	0.19	0.15

16599500 OPANA TUNNEL AT KAILILI—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR	FOR 2003 WATER YEAR	WATER YEARS 1965 - 2003
ANNUAL TOTAL	795.06	558.39	
ANNUAL MEAN	2.18	1.53	
HIGHEST ANNUAL MEAN			3.13
LOWEST ANNUAL MEAN			5.34
HIGHEST DAILY MEAN	13	Jan 19	1969
LOWEST DAILY MEAN	0.17	Nov 24	1.45
ANNUAL SEVEN-DAY MINIMUM	0.18	Nov 22	1981
ANNUAL RUNOFF (AC-FT)	1,580	1,110	18 Mar 31, 1982
10 PERCENT EXCEEDS	5.2	4.1	0.11 Nov 5, 1973
50 PERCENT EXCEEDS	1.2	0.82	0.11 Nov 4, 1973
90 PERCENT EXCEEDS	0.38	0.27	0.38

e Estimated

